



## **Living Breakwaters Frequently Asked Questions (FAQ)**

### **What are the components of the project?**

The Living Breakwaters Project is an approximately 4,000 linear foot long system of breakwaters off the coast of the south shore of Staten Island. In addition to the breakwater system, the project proposes oyster restoration both on the breakwaters and at oyster nurseries in Lemon Creek and Great Kills Harbor and an on-shore public Water Hub facility. The Water Hub will be used for shoreline programming including educational and stewardship programs by both the Billion Oyster Project and the New York City Department of Parks and Recreation.

### **What is the Tottenville Shoreline Protection Project (TSPP) and how does it relate to the Living Breakwaters?**

The TSPP is a separate project from Living Breakwaters; however, the two projects are being studied under the same Environmental Impact Statement (EIS). The TSPP is located on-shore along the Tottenville shoreline stretching from approximately Carteret Street to Page Avenue and consists of onshore coastal protection features including an earthen berm, a stone core sand capped dune, and eco-revetment and a raised pathway as well as a continuous multi-use path along the length of the project. While separate projects, the two projects will complement each other and function together to reduce risk, enhance ecology, and foster social resilience. This layered approach will help to create a more comprehensive coastal resilience strategy for Tottenville.

### **How did the Living Breakwaters project come about?**

In June 2013, U.S. Department of Housing and Urban Development (HUD) launched Rebuild by Design (RBD), a competition in response to the damage caused by Superstorm Sandy. The Living Breakwaters Project, developed by the SCAPE team, was one of 6 winning proposals selected for funding in June 2015. Funding to implement the project was awarded to the NY Governor's Office of Storm Recovery (GOSR).

### **Why is this project important to Staten Island and to Tottenville?**

Tottenville, known as "The Town the Oyster Built," has a rich maritime history and close relationship with the water. Once a home for sailors, fishermen, and oyster farmers, the abundant marine life off the south shore of Staten Island played a vital role in shaping New York State's southernmost community. With the loss of natural protective features along its coast, such as oyster beds, the Tottenville shoreline has seen an average erosion rate of one to three feet of loss per year since 1978. Beyond shoreline loss trends, more frequent, stronger storms are threatening Tottenville's coastline residents. This was evident in 2012 as waves from Superstorm Sandy took homes off their foundations, damaged property, and led to loss of life. The Living Breakwaters project is a first-of-its kind investment along Staten Island's shoreline. This innovative project combines traditional gray infrastructure with green infrastructure to create a system that will help reduce risk in the community of Tottenville from damaging waves, while enhancing a once-thriving marine environment. The project also offers the opportunity to connect students and educators to the waterfront to learn from the various project elements, including habitat restoration. This \$60 million investment by federal, state, and city governments is unprecedented, and the project promises to offer solutions to other communities on how to reduce risk from volatile storms and climate change, while improving marine environments and reconnecting communities to the waterfront.

### **What are the goals of the project?**

The project has three main goals. The first goal is to reduce risk, specifically from erosion and storm wave damage. Secondly, the project aims to enhance the marine ecosystem in the area by increasing rocky structured habitat and increasing habitat diversity (e.g. oyster reefs and fish and shellfish habitat) through the design of the breakwaters and their materials. Finally, social resiliency is key in making this project successful. The enhanced opportunities for access and recreation created by the protected beaches and enhanced habitat will be critical, and an on-shore Water Hub will be the home for education programs on coastal resiliency to help foster community stewardship. The facility will also be instrumental in increasing physical and visual access to the water's edge.

### **This project is not keeping water out of our communities, why should I care about it?**

Tottenville experienced severe damage from storm waves during Superstorm Sandy, not just inundation. Living Breakwaters will help attenuate wave action, reducing or preventing damages from high energy wave action. The project will also help to stabilize, slow, and potentially even reverse the ongoing erosion that has been happening for 35+ years at an average rate 1 ft/yr along the Tottenville shoreline. In addition, larger goals of environmental education, shoreline access, and restoring beach width will help to create a vibrant shoreline, providing multi-functional infrastructure that improves lives every day of the year.

### **What will be breakwaters be constructed of?**

The breakwaters will largely be made of stone, tested and engineered to be strong enough to withstand the waves during a large storm. Additionally, biologically enhanced concrete units will replace some stones to add additional habitat enhancement to the breakwater structures. These units are engineered to have the same strength properties as stone, and utilize a special mix of concrete to create a more ideal material for ecological recruitment than normally used marine concrete. These concrete units have been tested on breakwater structures worldwide, as well as in New York Harbor.

### **Will it disrupt my view?**

Minimal view disruptions are anticipated as the breakwaters will be 730 to 1,200 feet offshore in water depths of approximately 2 – 10 feet below mean low water (NAVD88). The relatively short length of the breakwaters in comparison to the horizon and regular spacing between breakwater segments means that views around, between, and beyond the breakwaters will be regularly visible.

### **What types of studies have been conducted for the project?**

On shore and offshore topographic / bathymetric surveys, habitat surveys, and geotechnical boring surveys have helped to establish the condition that currently exists, informing the design of the breakwater system. In addition, multiple types of coastal and shoreline modeling have been utilized to test, analyze and refine potential breakwater design scenarios. These have included modeling the estimated shoreline change over a 20 year timeframe and the dynamics around different breakwater configurations. Water circulation simulations have been conducted in order to determine what, if any, effects the breakwaters will have on water quality in the area.

### **What is the funding for the project?**

New York State has been allocated \$60 million from the HUD Community Development Block Grant Disaster Recovery (CDBG-DR) funds to implement the Living Breakwaters project at Tottenville on the South Shore of Staten Island.

### **How will the project enhance marine life and provide habitat?**

The Living Breakwaters are designed to avoid and minimize negative impacts while optimizing habitat creation and ecosystem services. To avoid critical habitats and to reduce the structures overall footprint, the Living Breakwaters are designed with minimized crest widths and reduced crest elevations where this is consistent with the project's risk reduction goals. Steeper side slopes allow for a smaller footprint while still being structurally sound and providing opportunities for ecological enhancement on surfaces within the intertidal and subtidal

areas. The use of multiple breakwaters with small gap widths rather than long, continuous breakwaters also helps to reduce footprint sizes while creating additional habitat variety between the ends of the breakwaters. The Living Breakwaters introduce hard structured habitat to the bay, a habitat type which is currently lacking, providing space for forage and refuge for many species and will increase the habitat diversity of the bay which currently consists of largely ubiquitous sand and gravel bottomed habitat with little of the habitat diversity that was historically observed in the bay.

**What is the timeline for the project?**

The project is currently in design. Construction is anticipated to start in mid-2018 and is currently projected to be completed by the end of 2020.

**I have concerns or ideas about the project, how can my voice be heard?**

You are invited to attend any upcoming Citizens Advisory Committee meeting or other public outreach/engagement events. The next date of each CAC meeting are posted on the project website once they are in place. Additionally, there will be opportunities to comment on the project's Environmental Impact Statement when released in early 2017.